

COUSIN et al
Appl. No. 10/531,481
June 27, 2008

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REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1, 2 and 4-14 are in the case.

I. THE ANTICIPATION REJECTION

Claims 1, 2, 13 and 14 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by EP 801081, pages 1-10; or U.S. Patent 3,920,624, columns 1-10; U.S. Patent 4,710,538, columns 1-10, Tables I-V and claims 1,2, 6, 7; or U.S. Patent 4,958,006, columns 1-9. The rejection is respectfully traversed.

Without conceding to the merit of the rejection and in order to expedite prosecution, claim 1 has been amended to incorporate the subject matter of claim 3 which is not anticipated by any of the prior art cited in the Action. Claim 3 has accordingly been cancelled without prejudice to the possibility of pursuing the subject matter of that claim in a separate continuing application. Since claim 3 is not rejected on anticipation grounds, it is believed that the outstanding anticipation rejection should now be withdrawn. Such action is respectfully requested.

II. THE OBVIOUSNESS REJECTION

Claims 1-14 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over EP 801081, pages 1-10 or U.S. Patent 3,920,624, columns 1-10. That rejection is respectfully traversed.

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As claimed, the invention provides a process for the separation of volatile material from particulate polymer which has been substantially freed from unreacted monomer in an earlier separation step using an insert gas. The process comprises (a) feeding the particulate polymer to a purge vessel and causing it to move through the vessel in substantially plug-flow mode, (b) heating the particulate polymer in the purge vessel to a temperature greater than 30°C but insufficiently high to cause the particles to become agglomerated, and/or maintaining the polymer at a temperature in this range in the purge vessel, (c) feeding gas to the purge vessel to remove volatile material therefrom, removing the particulate polymer from the purge vessel. Substantially all of the heating of the particles which occurs in the purge vessel is accomplished by preheating the gas fed into the purge vessel and at least a portion of the gas fed to the purge vessel enters the vessel at one or more points located closer to the top of the vessel than to the bottom.

Referring to claim 1 as amended, at least a portion of the gas fed to the purge vessel enters the vessel at one or more points located closer to the top of the vessel than to the bottom. In addition, claim 1 requires that the particulate polymer "has been substantially freed from unreacted monomer in an earlier separation step". This prior separation step is significant because the prior substantial removal of unreacted monomer makes it possible to use any gas (including air) in the volatiles separation aspect of the process. If unreacted monomer is not substantially removed in an earlier separation step, use of air, for example, in the purge vessel to remove the volatiles would result in an unacceptable fire risk. This is a principal reason for using inert gas to devolatilize polymer streams. Moreover, by substantially removing unreacted monomer

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in the prior separation step, since a large amount of gas is required to reduce the level of volatile components to very low levels, the use of air is much less expensive, thereby reducing overall costs of operating the process.

The present invention is therefore in essence a two-step process in which the majority of the unreacted monomer is removed using an inert gas in a prior separation step, and a further separation is then conducted using any gas, which is typically air but not limited to air, to remove the volatiles. This two step process is not suggested by the cited prior art.

U.S. patent 3,920,624 describes a single step process for stripping residual volatiles from polymer pellets. There is no suggestion of the two step process of the present invention whereby unreacted monomer is first removed using inert gas followed by removal of the volatiles using a gas such as air.

EP 801081 A discloses a two-step process in which, in the first step, the polymer is contacted with a gaseous polymerization feed and, in the second step, the polymer is contacted with an inert-gas containing drying gas. There is no disclosure or suggestion in EP 801081 A of feeding at least a portion of the gas into the purge vessel at one or more points located closer to the top of the vessel than to the bottom, a now required by amended claim 1. The benefit of adding some of the gas higher up the vessel is explained in the description on page 8 lines 3 onwards. Thus, this arrangement results in a lower pressure being required, with only a low velocity required for the remaining gas introduced at the bottom of the vessel, as the polymer is already heated, resulting in greater efficiency. This feature and associated advantage are not suggested by any of the cited prior art in this case.

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Claim 1 further requires particulate polymer moving through a purge vessel in plug flow mode. This feature distinguishes claim 1 from U.S. patent 4,71 0,538, which concerns a polymerization reactor. U.S. patent 4,958,006 relates to treatment of polymer in an extruder, where the polymer will be molten rather than particulate. These two patents are irrelevant to the presently claimed invention.

Based on the above, it is clear that one of ordinary skill in this art would not have been motivated to arrive at the presently claimed invention based on the cited prior art. Absent any such motivation, a *prima facie* case of obviousness has not been generated in this case. Withdrawal of the obviousness rejection is accordingly respectfully requested.

III. CLAIM AMENDMENTS

Claim 1 has been amended by introducing the features of original claim 3. Claim 3 has been canceled without prejudice to pursuing the subject matter of that claim in a separate continuing application. It is understood that this amendment has been made to expedite prosecution and is not to be taken as a concession that any merit resides in the outstanding rejections. In addition, claim 1 has been amended by inserting "using an inert gas" after "earlier separation step" at the beginning of the claim. Support for this amendment appears in the application as originally filed at page 2, lines 22 and 29 taken in conjunction with the statement at page 3, lines 3-7, where it is stated that the particulate polymer has been previously subjected to at least one process for separating unreacted monomer as described in GB-A-1272778 and EP-A-047077. Both of these prior patents are discussed earlier in the specification at page 2, lines 18-30 where

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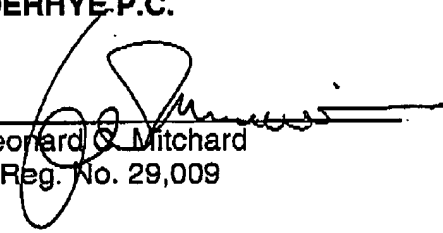
specific reference is made to treatment of the polymer particles with a stream of inert gas to remove volatile constituents (see at page 2, lines 22 and 29). Finally, the specification has been amended to incorporate customary headings, including a Brief Description of the Drawings. No new matter is entered.

Favorable action is awaited.

Respectfully submitted,

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